**Effect of type of median barrier on average speed**

A linear model was estimated with vehicle speed as the dependent variable and the following independent variables: speed limit, type of median barrier, area type, terrain, lane position (represented by whether the vehicle was in the left lane or another lane), vehicle type, and the ratio of ADT to the total number of lanes. The site number was included as a random factor. The model was estimated using a statistics/econometrics package called LIMDEP (Greene, 2002). The specific details of the model are discussed in Appendix B. Following is a summary of the results from the model:

1. The hypothesis of interest, i.e., type of median barrier does not influence mean vehicle speed, is not rejected. In other words, the type of median barrier does not seem to be significantly associated with driver speed.
2. As expected, vehicles travel slower if the speed limit is lower. Based on the model, compared to the average speeds on 70 mph freeways, average speeds are 9 mph lower on 55 mph roads, 3.6 mph lower on 60 mph roads, and 2.4 mph lower on 65 mph roads.
3. Vehicles traveling in the left lane travel approximately 4 mph faster than vehicles traveling in other lanes
4. Cars, SUVs, vans, and pickups, travel approximately 2 to 3 mph faster than the truck/trailer/buses group.

**Effect of type of median barrier on the propensity to exceed the speed limit**

In order to study the effect of median type on the propensity to exceed the speed limit, the speed data were divided into that those are speeding (i.e., exceeding the posted speed limit) and those that are not. Similarly, vehicles were assigned the speeding characteristic for exceeding the posted speed limit by 5, 10, or 15 mph. Four logit models were developed to study the following cases:

1. Probability of exceeding the speed limit
2. Probability of exceeding the speed limit by 5 mph or more
3. Probability of exceeding the speed limit by 10 mph or more
4. Probability of exceeding the speed limit by 15 mph or more

In general, classical logit models assume that observations are independent of one another. However, in our case, observations within a site will be correlated, and this cannot be ignored. The models were estimated using SAS %GLIMMIX MACRO[4], which explicitly accounts for this correlation. The estimation algorithm uses the principle of quasi-likelihood procedure repeatedly fitting a linear mixed model to a pseudo response (see Chapter 11 of Littell et al. 1996). The logit model for the first case, i.e., probability of exceeding the speed limit, is discussed in Appendix C.

The results from the logit models are consistent with the results obtained from the average speed models, i.e, type of median barrier does not significantly influence the probability of drivers exceeding the speed limit by 0 mph, 5 mph, 10 mph, or 15 mph. The probability of drivers

[4] http://ftp.sas.com/techsup/download/stat/glmm800.html